RESIDENTIAL SECURITY BARS

Leading Community Risk Reduction

Residential Security Bars

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Certification Statement

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotations marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

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Abstract

The problem address was that the Jackson Fire Department is responding to a significant number of residential structure fires where citizens and firefighters are becoming trapped due to the increased use of improper residential security bars on windows and doors. The purpose of the research project was to identify a strategy to reduce the number of egress problems posed by residential security bars. The descriptive research method was used to answer the follow questions: What is the history pertaining to fire deaths involving residential security bars? What have other fire departments and communities done to reduce or prevent the number of residential security bar related injuries or fatalities? What federal regulations, state laws, local ordinances, codes or standards regulate residential security bars? What type of training should be provided for emergency response personnel concerning residential security bars? What elements should be included in programs developed to inform residents of the fire dangers associated with residential security bars? A windshield survey, telephone surveys, and literature review were used to identify elements needed to develop a strategy concerning residential security bars. The result was the identification of target audiences, the need for specific training of responders, and the need of code enforcement. Recommendations included seeking the fire chief's approval and support, organization of a legislative committee, enlistment of assistance from the Fire Safety Division, develop partnerships, identify funding resources, development of emergency operation guidelines and training programs, familiarization windshield surveys, and the appointment of a coordinator within the JFD to ensure continuity of the program.

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Introduction

Residential Security Bars

The use of security bars has become common on residential structures as occupants attempt to protect themselves and their families from crime. Fires in residential structures equipped with security bars create unique dangers and hazards to occupants and firefighters. The problem is that the Jackson Fire Department is responding to a significant number of residential structure fires where citizens and firefighters are becoming trapped due to the increased use of improper residential security bars on windows and doors. What occupants have installed to keep themselves safe has become the object that threatens their own safety (Coleman, 1994).

The purpose of this research project is to identify a strategy to reduce the number of egress problems posed by residential security bars. The descriptive research method was used to answer the following questions:

1. What is the history pertaining to fire deaths involving residential security bars?
2. What have other fire departments and communities done to reduce or prevent the number of residential security bar related injuries or fatalities?
3. What federal regulations, state laws, local ordinances, codes or standards regulate residential security bars?
4. What type of training should be provided for emergency response personnel concerning residential security bars?
5. What elements should be included in programs developed to inform residents of the fire dangers associated with residential security bars?

Background and Significance

The Jackson, Mississippi, Fire Department (JFD) is a well-respected establishment with a strong history of aggressive firefighting. Organized fire protection for the City of Jackson, Mississippi began in 1839 and was serviced until 1904 by five volunteer fire companies. Equipment was meager consisting of hand pumps or engines that were pulled to the fire scene. Water supply was limited to wells, ponds, and cisterns. As advancements in technology grew, horses and wagons were utilized to transport steam engines to the scenes.

In 1904, the Jackson Volunteer Fire Department was changed by city ordinance to a career department. The City purchased the equipment and buildings from the volunteer companies for $9000. In 1904, J. C. Watters became the first paid fire chief. He served until his death, in 1907, from burns sustained at a fire. Jim Cummings served as fire chief from 1907 to 1917. The JFD purchased its first two motorized fire engines in 1914 and 1917. By 1918, all seven of the horse drawn steamers were replaced and a new era of firefighting began. In 1917, L. F. McDonald was appointed fire chief. He served as fire chief for forty-three years and then went on to serve as Public Safety Director for seven more years (Jackson Fire Department, 2004).

In 1917, the JFD consisted of thirty-five members. Today, the JFD consists of three hundred eighty-eight personnel, twenty-one stations, and seventy-two pieces of equipment. The City of Jackson has a population of 184,256 residents (United States Census Bureau, 2000).

Due to recent budget cuts and restrictions, the number of response personnel initially dispatched to a residential structure fire has diminished by up to six personnel. A

typical dispatch to a residential fire consists of two engine companies, a rescue unit, a ladder truck, and a district chief. In 1992, when the JFD received its last rating by the Mississippi Insurance Rating Bureau, each type of emergency response equipment was staffed with four personnel. At the time of this research project, minimum staffing for each unit had been reduced to three personnel.

The reduction of personnel on scene requires special training and attention to details to help prevent the entrapment of firefighters in residences secured with bars on windows and doors. Secondary means of egress are vital to firefighters who become trapped by fire. Timely removal of security bars is essential to reducing barriers that prohibit civilian and firefighter escape (McCormack, 1997).

Certain neighborhoods within the city of Jackson are constant targets of crimes such as burglary and robbery. Because of this, occupants are more concerned with the criminal elements in their neighborhoods compared to the dangers of becoming trapped in their homes by fire (Gustin, 1995). According to the Uniform Crime Report complied by the Federal Bureau of Investigation, over two million people were burglarized in 1998. According to the National Fire Reporting System (NFIRS), only 381,000 residential fires were reported for that same time period (Roberson, 2002). The poorer neighborhoods that are more at risk to crime also experience the largest number of fatal fires (Chubb, 1993; Crow, 2005; Paradise, 2003).

This applied research project (ARP) was conducted as a requirement of the Leading Community Risk Reduction course offered by the National Fire Academy (NFA). By addressing the problem of improper residential security bars, the JFD will be more effective in accomplishing its mission of protecting the lives of the citizens and

firefighters of Jackson and its visitors. This ARP is related to the United States Fire Administration (USFA) Operational Objective to reduce the loss of life from fire by 15 percent (United States Fire Administration, 2005).

Through descriptive research this ARP will seek to identify a strategy to reduce the number of egress problems posed by residential security bars.

Literature Review

In the course of this research, five questions were asked: (1) What is the history pertaining to fire deaths involving residential security bars? (2) What have other fire departments and communities done to reduce or prevent the number of residential security bar related injuries or fatalities? (3) What federal regulations, state laws, local ordinances, codes or standards regulate residential security bars? (4) What type of training should be provided for emergency response personnel concerning residential security bars? (5) What elements should be included in programs developed to inform residents of the fire dangers associated with residential security bars?

First, what is the history pertaining to fire deaths involving residential security bars? More than 4,000 Americans die each year in fires and approximately 25,000 others are injured (United States Fire Administration, 2004). According to data supplied by NFIRS, an average of 25 civilians are either injured or die each year in fires where egress is deterred by unauthorized security bars or gates (Roberson, 2002). Statistics gathered by the Learn Not to Burn Foundation showed that between 1985 and 1991 and average of 16 persons died each year due to security bars blocking their exits from burning homes or buildings (National Burglar and Fire Alarm Association, 2003).

In 1993, seven people died in a single-family dwelling fire in Bruce, Mississippi. Neighbors attempted to rescue the occupants, but were restrained due to stationary burglar bars on the windows (Roberson, 2002). In 1995, four children died in a single-family dwelling fire in Texas when their escape was blocked because of bars on the windows (Tremblay, 1995).

In 1996, four persons died in a single-family dwelling fire in California that was secured with bars on the windows and doors. This structure had three bedrooms, but only two bedroom windows had release mechanisms installed. Two victims were found near the front door that was blocked by security bars. One victim was found in the kitchen, and the fourth was found in the dining room. Firefighters were unable to open the bars on the front door, but finally removed the bars on a window to make access into the structure. That same year, two adults were killed and three children were injured in an apartment fire in Florida. Security bars on the windows and a security gate on the front door hampered firefighters' efforts to rescue the occupants (Tremblay, 1996).

In 1998, in San Antonio, Texas, two children died and three other occupants were injured in a single-family dwelling fire due to heavy fire and burglar bars. The burglar bars did not have quick-release mechanisms. A woman and her two grandchildren were killed in a single-family dwelling fire in Chicago, Illinois in 1999. Neighbors tried unsuccessfully to remove the burglar bars to reach the victims (Roberson, 2002).

On December 23, 2000, two children died in an apartment fire in New York City, New York, when the family's Christmas tree caught fire. The occupants were unable to get out onto the fire escape due to a padlocked gate that the family and several of their neighbors had installed to keep burglars out. The next day, five family members were

killed in a single-family dwelling fire in Lafayette, Louisiana. The fire started when two burners from a stove that were being used for heat ignited combustibles in the kitchen. This dwelling did have security bars equipped with latching devices, but the occupants were unable to open them either due to panic or confusion (Roberson, 2002).

In 2001, there were several separate residential fire fatalities involving security bars. On June 20th, three occupants died in a single-family dwelling fire in Houston, Texas due to non-compliant security bars on the windows and doors. On July 3rd, four more Houston residents died in a single-family dwelling fire. The bars on this structure were secured with a key and did not have quick-release mechanisms as required by city ordinance. A December 26th fire killed three children in a duplex fire in Detroit, Michigan. Once again, burglar bars prevented their escape and hindered rescue attempts (Roberson, 2002).

In 2002, three members of a Texas family died when their home caught fire. This residence had security bars without quick-release mechanisms on the windows and doors (Tremblay, 2002). In 2003, a mother and her two children were killed in a single-family dwelling fire in Oklahoma after the Christmas tree they were removing from the house touched a gas-fired heater and ignited. The fire blocked their exit through the doorway and bars over the windows prevented their escape from the two-story structure. There were working smoke detectors in the home, but no sprinkler system (Tremblay, 2003, January/February).

Two adults and a five year old boy died in a 2003 single-family dwelling fire in Alabama. Security bars blocked their escape, but firefighters were able to remove the bars on the front door and rescued three other children (Tremblay, 2003,

November/December). In 2004, a Nevada family was trapped inside their single-family dwelling due to heavy fire blocking their primary exit and security bars blocking the other door and windows. Firefighters arrived on scene and made forcible entry through the front door to search for victims. A 53-year old woman died of smoke inhalation and four others were rescued, but suffered from smoke inhalation injuries (Tremblay, 2004).

The history pertaining to fire deaths involving residential security bars reveal several commonalities: it is a national problem, not just a local one; most incidents involve multiple fire deaths; and a common factor was noted on all but one of the previous case studies – smoke detectors. There were no reports of working smoke detectors in the residences with fire fatalities previously mentioned, except for the one in 2003 in Oklahoma.

Second, what have other fire departments and communities done to reduce or prevent the number of residential security bar related injuries or fatalities? Fort Lauderdale, Florida Fire Department addressed the problem of safety code violations involving security bars beginning with a drive-by survey of the homes throughout the 35 square mile city. Inspectors created a list of all houses with security bars. Officials visited neighborhood groups and organizations to explain the dangers associated with security bars. Inspectors then went to each home found to be in violation of code and gave the owners a deadline for complying with the codes. A state Community Block Grant was obtained to assist income-qualified families with the replacement costs. The city pre-approved contractors before the start of the program that could be hired to make repairs or replacement (Paradise, 2003).

In 1972, the City of Fort Worth, Texas passed an ordinance requiring quick-release mechanisms on at least one set of bars that cover any window or rescue opening of a sleeping area. Esparza (1995) stated in his research that the City of Fort Worth had formed a multi-agency service intervention program and that any illegal burglar bars identified would be replaced at no cost to the citizens by the Housing Department.

Dallas, Texas implemented an educational campaign to inform citizens of the dangers involved with the installation of burglar bars on windows. This campaign focused on at-risk, low-income neighborhoods. Dallas then obtained funding through a Community Development Block Grant from the United States Department of Housing and Urban Development (HUD) to replace nonconforming burglar bars with quick-release mechanisms. Approximately $400,000 was allocated for the program, but only $81,000 was spent due to poor community participation. The reasoning given for the poor response was that residents felt that “if they could get out, then the bad guys could get in” (Chubb, 1994).

San Antonio, Texas began a program to address security bar issues when fire fatalities continued to occur despite public education programs. The building department became involved by meeting with burglar bar manufacturers to review code requirements. A public hotline was established to receive calls from citizens concerning burglar bar issues. Inspectors visited homes when called and made recommendations to replace bars that did not meet code requirements for new buildings. Since San Antonio had not adopted requirements for installation of security bars on existing buildings, no citations were issued (Chubb, 2004).

The Los Angeles, California Fire Department companies routinely ride their response districts and make note of possible illegal security bar installations. The list of possible violators is referred to the city's Buildings and Safety Department for inspection. Occupants have the right to refuse entry of the premise by inspectors, but photographs taken from a public right-of-way along with an affidavit from the inspector is usually sufficient enough to obtain a search warrant (Chubb, 1993).

The Casselberry, Florida Fire Department launched a proactive plan to address security bar issues in its community after news from another Florida city was brought to attention by the *Tampa Tribune,* in 1997, of four children who died in a residence armored with security bars. Engine companies and rescue units rode their respective districts in search of homes with security bars installed. This information was forwarded to the Fire Marshal's office for review. Assistance from local security bar manufacturers and installers was obtained to help determine what types of release mechanisms were available. The Fire Marshal's Office approached the fire chief and the city manager to explain the problem and to gain their support. The plan was then presented to the city commissioners, who also supported the new project.

Building codes were revised to require each sleeping area in a residence to have at least one window or door that opened to the exterior and security bars that could be opened from the inside without the use of separate keys or tools. These code changes were made applicable to existing buildings as well as to new construction. The Fire Marshal's Office was given authority to mandate compliance by a certain date. A local philanthropic organization was recruited to assist with subsidizing the cost of replacement of noncompliant bars (Davidson, 2000).

Various departments and communities have addressed the issue of residential security bars through local code adoption, enforcement of codes and laws, identification of target neighborhoods, retrofitting, and education programs.

Third, what federal regulations, state laws, local ordinances, codes or standards regulate residential security bars? The National Fire Protection Association (NFPA) Life Safety Code 101 addresses the risk posed by unauthorized bars in Chapter 24.2, Section 24.2.2.3. It states that a window or other means of escape should be operable from inside "without the use of tools, keys, or special effort" (Roberson, 2002). The Life Safety Code states that egress "should require no special training or knowledge." This language includes children, older adults, and the handicapped, as well as those who may find themselves in emergency situations (Perrault, 1994).

A variety of model building and fire codes are used throughout the United States. Table 1 contains a list of model codes and the relevant sections that address emergency egress (Roberson, 2002).

Table 1. Model Building and Fire Codes

Model Code	**Edition**	**Section**
BOCA National Building Code	1997	1010.4
BOCA National Fire Prevention Code	1997	F-609.3
International Building Code	2000	1009.4
International Fire Code	2000	1009.4
International Code Council Performance Code for Buildings and Facilities	2001	1901
Standard Building Code	1997	1005.5

Standard Fire Prevention Code	1997	802.1.6.1
Uniform Building Code	1997	310.4
Uniform Fire Code	1997	1206

Building codes apply to both new construction as well as to existing buildings when alterations occur to the structure. The language of the codes is meant to cover existing buildings when security bars are installed. However, it is up to the local jurisdiction to adopt and enforce the codes (Perrault, 1994).

Several states have created special legislation to address residential security bars. The State of Mississippi passed House Bill 1678 in 1993, greatly in response to the Bruce, Mississippi fire where seven people lost their lives due to their escape being blocked by stationary burglar bars. Mississippi Code, Title 45, Chapter 11 *Fire Protection Regulations, Fire Protection and Fire Safety in Buildings*, cites the Standard Building Code concerning the sale of burglar bars. Section 45-11-71 requires that any person engaging in the sale of burglar bars to the public comply with 1105.7 of the Standard Building Code of the Southern Building Code Congress International. Section 45-11-73 authorizes the State Fire Marshal to promulgate rules and regulations concerning the sale of burglar bars. Section 45-11-75 provides for a penalty for violations of not more than $1000. However, in the case of continuing violations, each day of violation can be considered a separate offense (Roberson, 2002).

Mississippi State Representative Phil Bryant authored House Bill 1678. He enlisted fellow representatives and fire chiefs from within the state to help push for the bill's passage. The bill required the State Fire Marshal to regulate the installation of security bars so that all sleeping rooms have at least one window that can be easily

opened from the interior. This mandate was accomplished through the regulation of the sale of security bars (Perrault, 1994).

The State of California passed legislation addressing residential security bars after a series of incidents in 1995 that killed 12 people (Miller, 1998). California Health and Safety Code, Section 13113.9 references the California Building Standards Code requirements for fire safety. It also requires persons selling or installing burglar bars to ensure the bars are labeled with warnings and to provide the owner of the residence with warning information concerning fire safety. Section 13114.1 authorizes the State Fire Marshal to "prepare and distribute educational materials about the dangers of unsafe burglar bars." Section 13114.2 directs the State Fire Marshal to "adopt regulations and standards to control the quality of and installation of burglar bars and safety release mechanisms." Section 13114.5 allows "the governing body of any city or county to enact ordinances or laws imposing restrictions greater than those imposed by Sections 13113 and 13114" (Roberson, 2002).

Daly City, California is one local jurisdiction that requires a building permit for the installation of residential security bars. The presence of smoke detectors is also required in buildings equipped with security bars according to Section 310.9 of the 1999 California Building Code. Daly City also specifies the minimum opening height and width of windows used for emergency exits (Daly City, 2006).

The State of Texas has enacted legislation addressing residential security bars, found under Health and Safety Code 756.081. Under this code, a residential dwelling is defined as a single-family dwelling, a duplex, a triplex, an apartment, a motel or hotel, and a mobile home. Section 756.082 states that security bars cannot be installed on a

door or window of a residence unless, the security bars on at least one window or door is equipped with an interior release mechanism and can be opened to the exterior of the building for emergency escape or rescue. Section 756.083 requires warning labels on all security bars sold. Section 756.084 authorizes the State Fire Marshal to recommend release mechanisms that have been shown to be effective (Roberson, 2002; Texas, 1999).

The Florida Building Code, Section 1005 allows security bars as long as each sleeping room has at least one emergency escape or rescue opening. Security bars on the emergency escape opening must be fitted with an emergency release mechanism. Miami-Dade County Commissioners sponsored a resolution to create a public awareness campaign to encourage compliance to the Florida Building Code after a house fire, with stationary security bars, almost killed an entire family (Miami-Dade, 2005).

The NFPA Life Safety Code 101 is used as a national standard concerning life safety issues. Model building and fire codes are used throughout the United States that address egress from structures. The states of California, Florida, Mississippi, and Texas have aggressive laws specifically addressing residential security bar requirements.

Fourth, what type of training should be provided for emergency response personnel concerning residential security bars? Coleman (1994) stresses that preplanning and technical training must be provided to firefighters in order to operate under high pressure situations with limited time factors. Firefighters should familiarize themselves with the types of security bars commonly used in their response areas. Windshield surveys of first response districts are a first step in identifying target hazards (Crow, 2005; Roberson, 2002).

Residential security bars are normally grouped into two large groups: stationary and gated. Stationary bars are usually secured to the structure by means of lag bolts, in wood-framed buildings, or set in the mortar of masonry buildings. Firefighters need to understand building construction and the most likely weak points that will facilitate the easiest removal of the bars. Familiarization tours on site of a heavily protected home will prove to be of great value should the occasion to remove security bars during an actual emergency arise (McCormack, 1997).

Removal of security bars may require special tools and techniques. Firefighters must know what their resources are and make the best use of those tools. Bar removal may be accomplished manually with the use of sledge hammers and picks. Rotary saws or air chisels may be a better choice. Hydraulic tools with spreaders could also be utilized (Gustin, 1994; Kemper & Mittendorf, 1993; Troxell, 2000).

Other considerations include apparatus placement, portable ladders, hoseline application, ventilation practices, on-scene communications, and establishment of rapid intervention teams. Ladder apparatus placement can be crucial on multistory residential structures. Removal of security bars from upper floors will be more stable when conducted from aerial ladders versus portable ground ladders. Some structures will not allow the use of aerial ladders and portable ladders will have to be utilized to remove the bars and to provide a means of egress (McCormick, 1997).

Hoseline placement and ventilation practices will go hand-in-hand when victims are trapped in a structure armored with security bars. Typical application under normal circumstances is to advance the hoseline through a doorway on the uninvolved side of the structure and advance it to the seat of the fire. This forces the heat and smoke away from

the firefighters. If victims are present, hoseline placement and positive pressure ventilation may be required at the window nearest the victim in order to try and protect them until they can be removed (Gustin, 1995).

On-scene communication is vital between interior search and rescue crews and bar removal teams. As bars are removed, that information must be relayed to the search and rescue crew so that they know where their nearest point of egress is located. Whenever interior crews are working under such restraints, rapid intervention crews must be established and ready for deployment in the event firefighters become entrapped (McCormack, 1997).

Firefighters should be trained on how to operate safely on fire scenes when residential security bars are present. Responders need to be made aware of the different types of security bar mounting and how to effectively remove them under adverse situations. Proper tactical considerations are important factors to ensure a successful outcome.

Lastly, what elements should be included in programs developed to inform residents of the fire dangers associated with residential security bars? The three E's of enforcement, engineering, and education are vital to the success of a program such as this.

The United States Fire Administration (USFA) has developed an informational pamphlet (Appendix A) that lists six tips to help reduce the number of fire related injuries and deaths associated with security bars on windows and doors. The six tips include the use of quick release devices on barred windows and doors, retrofitting current fixed security bars, awareness of security bars when practicing fire escape routes, plan for two

exits out of each room, designate an outside meeting place, and once out of the house, stay out (United States Fire Administration, 2004).

Proactive measures can be taken to target neighborhoods with high visibility of security bars. Once target areas are identified, fire prevention and safety education programs should be developed to make occupants aware of the associated dangers. Smoke alarm checks and installation programs can be a means to establish dialog with residents (Roberson, 2002).

After a 2001 house fire that resulted in four deaths in Houston, Texas, firefighters went door-to-door throughout that neighborhood to check smoke detectors, warn residents of the dangers of security bars, and passed out safety information. Occupants were admonished to make sure everyone in the home participated in exit drills, including opening security bars (Robertson, 2002). Exit drills in the home are emphasized by several authors (American Red Cross, 2005; Coleman, 1994; National Disaster Education Coalition, 2004; Perrault, 1994; Roberson, 2002).

One particular insurance company provides fire safety information concerning security bars on its web site, stressing the importance of quick release devices on security bars (State Farm Insurance Company, 2006). Passive means of providing information on security bar dangers include web-based literature and links on community web sites.

Communication is an important aspect of accomplishing the goal of informing residents of security bar dangers. Cooperation with other groups, such as, crime prevention units, neighborhood watch programs, neighborhood associations, civic organizations, and churches will increase the number of contacts for the program.

Security and fire safety personnel must work to form coalitions which help each other accomplish common goals. Communication and cooperation between the two entities will heighten awareness through education (Chubb, 1994).

Residents living in structures equipped with security bars need to be made aware of the associated dangers. Programs can be developed to incorporate how to get out of their residence by using exit drills, stressing the need to know how the quick-release mechanisms work on their bars, and emphasizing the importance of working smoke detectors. Collaboration of efforts with other safety minded organizations can help enlarge the target audience.

Procedures

Descriptive research was used to answer the questions of this ARP. A windshield survey was conducted of a cross section of the author's emergency response district (Appendix B). The purpose of the windshield survey was to determine the number of security bars visible from the public roadway (Appendix C).

Non-scientific telephone surveys were conducted with ten other fire departments across the United States of America (Appendix D). The departments surveyed were identified as having had civilian fire fatalities as a result of security bars blocking egress on windows and doors. The purpose of the telephone surveys was to determine how other communities have addressed the fire dangers associated with security bars (Appendix E).

Limitations

A limitation on this research was the six-month time frame in which the research had to be conducted, as there was not enough time to implement a program to determine

the effectiveness of education, engineering, and enforcement concerning residential security bars within the jurisdiction of the Jackson Fire Department. A project of this magnitude is an ongoing process and must continue long after the initial implementation phase. Another limitation noted was that the telephone surveys were not based on scientific sampling. The survey represents a convenience sampling of information obtained from departments identified to have had fire deaths related to security bars within their jurisdictions. A final limitation was the ineffectiveness of the windshield survey to determine the number of security bars on bedroom windows without quick release mechanisms.

Definitions of Terms

Egress – a way out or path of escape.

Exit drill – the application of plans developed to escape from a structure in the event of a fire.

Philanthropic – the effort or inclination to increase the well-being of mankind through charitable donations.

Promulgate – to broadcast; publicize.

Quick-release mechanism – a simple means of opening non-stationary bars for escape.

Results

What is the history pertaining to fire deaths involving residential security bars?

Fear of crime is a reality in society, thus the belief of a need to protect self, family, and property by means of armoring the home. Research shows that every state in the United States of America is subject to respond to a residential fire involving security

bars. Residential security bars account for an average of 25 civilian fire related injuries or deaths per year (National Burglar and Fire Alarm Association, 2003).

According to case studies identified, multiple injuries and deaths were cited in several incidents. Inoperable security bars on bedroom windows contributed to blocked egress and hampered rescuers' efforts (Roberson, 2002).

What have other fire departments and communities done to reduce or prevent the number of residential security bar related injuries or fatalities?

Many departments and communities have initiated aggressive public information campaigns to educate residents on the dangers of security bars when fire is a factor. Grant money was obtained by various communities to subsidize the expense of retrofitting noncompliant security bars with quick-release mechanisms (Chubb, 1994; Paradise, 2003).

Firefighters in Fort Lauderdale, Florida and Los Angeles, California are an active part in identifying target neighborhoods containing large numbers of residential security bars. Once identified, inspectors visit the residence and encourage compliance to local code. If compliance is not voluntary, the fire marshal has the authority to mandate compliance (Davidson, 2000).

What federal regulations, state laws, local ordinances, codes or standards regulate residential security bars?

This author found no federal regulations directed at residential security bars. The NFPA Life Safety Code 101 is used as a national standard concerning life safety issues. Model building and fire codes are used throughout the United States that address egress from structures (Roberson, 2002). Only a few states have laws pertaining to residential

security bars. The states of California, Florida, Mississippi, and Texas have aggressive laws specifically addressing residential security bar requirements. Most local jurisdictions mirror or enforce the state law concerning security bars. Although standards and codes are adopted by the local jurisdictions, few of them actually enforce compliance.

What type of training should be provided for emergency response personnel concerning residential security bars?

The majority of departments surveyed stated that training is provided to first responders on forcible entry techniques, but not specifically on security bar removal. Authors identified the need to know types of mountings, removal techniques, and tactical considerations (Gustin, 1994; Kemper & Mittendorf, 1993; McCormack, 1997; Troxell, 2000).

What elements should be included in programs developed to inform residents of the fire dangers associated with residential security bars?

The USFA pamphlet, *Fire Safe and Secure*, lists six tips for residents concerning security bars (Appendix A). First, use quick-release devices on barred windows and doors. Second, consider retrofitting current security bars. Third, be aware of security bar issues when practicing fire escape routes. Fourth, plan for two exits out of each room. Fifth, designate a meeting place outside the house and account for everyone. Sixth, get out and stay out (United States Fire Administration, 2004). Other authors echoed these points (American Red Cross, 2005; National Disaster Education Coalition, 2004; Roberson, 2002).

A windshield survey was conducted in a cross section of the first response district of this author. There are two distinct neighborhoods within this area (Appendix B). For the purpose of this research, the map was divided into Division A and Division B. Division A is located on the west side of North State Street. This area consists of homes built mainly between 1940 and 1960. The average house is approximately 1200 square feet. The average household income is approximately $25,000 per year.

Division B is located on the east side of North State Street. The homes in this area were built in the 1950's through the 1980's. These homes vary in size from 1200 square feet to 5000 square feet, with the average being approximately 2200 square feet. The average household income is approximately $60,000 per year.

The survey revealed that 74 homes in Division A were armored with bars on the doors and 45 homes had security bars on windows. Thirty-three homes had bars on both windows and doors. Approximately 50% of all homes in this area were secured with bars of some sort.

The survey also revealed that in Division B there were 40 homes with security bars on the doors. Eight homes were identified to have bars on windows. Only four residences had bars on both windows and doors that were visible from the roadway. Less that 15% of the homes in this area were armored with bars on either windows or doors.

A telephone survey was conducted of departments from across the United States that were identified to have had a fire related injury or fatality where residential security bars were a factor. Ten departments were contacted and asked the following questions:

1. What is the population of the community served by your organization?				
<100,000	100,000-150,000	150,001-200,000	200,001-500,000	>5000,000
0	1	3	0	6

2. How many uniformed members does your department have?			
<200	200-400	401-1000	>1000
0	1	3	6

3. Has your department responded to a fire incident where residential security bars were a factor in a fatality or injury?	
Yes	No
10	0

The number of fatalities varied from one to four per incident cited. The number of injuries identified varied from one to five per incident.

4. Has your department taken steps to help prevent similar incidents from occurring?	
Yes	No
6	4

The steps identified by the departments that did take preventative action included community outreach programs, stressing the use of quick-release mechanisms, poster campaigns, and public service announcements on television and radio.

5. Are there any local ordinances or state laws directed at residential security bars affecting your jurisdiction?	
Yes	No
6	4

Of the departments that responded positively concerning local ordinances or state laws, five of them are located within states that have laws directed at security bars. Detroit, Michigan indicated that there is a local maintenance code for residential security bars. Fort Worth, Texas requires a permit to install security bars.

6. Has your department conducted any special training for firefighters concerning security bars?	
Yes	No
8	2

Most departments surveyed indicated that their firefighters were trained concerning security bars. The types of training identified were limited to the operation of cutting and forcible entry tools.

Discussion

A comparative study of the literature review, windshield surveys, and telephone surveys revealed a variety of perspectives concerning residential security bars.

What is the history pertaining to fire deaths involving residential security bars?

The number of fire deaths and injuries per year that are associated with residential security bars is small in comparison to other factors. Residential security bars account

for an average of 25 civilian fire related injuries or deaths per year (National Burglar and Fire Alarm Association, 2003). Annual statistics show that more than 4,000 Americans die each year in fires and approximately 25,000 others are injured (United States Fire Administration, 2004). Although the loss of one life is unacceptable, resources are allocated to accomplish the most positive impact possible. Most departments do not view residential security bars as being a priority issue.

What have other fire departments and communities done to reduce or prevent the number of residential security bar related injuries or fatalities?

Fire departments all across the United States are raising awareness of associated dangers of residential security bars. Firefighters are being encouraged to know their districts and where the most potential to encounter security bars will be. This is being accomplished through familiarization tours of their response district and by conducting windshield surveys of the number and types of bars within that area (Chubb, 1993; Paradise, 2003). The windshield survey conducted by this author revealed that security bars are more prevalent in low-income neighborhoods where crime is common. It was not possible to determine the number of stationary mounted bars versus the ones that were operable. This author also observed a large number of bars on windows and doors that appeared to be home made.

Some departments are becoming aggressive in their attitude toward code compliance. Quick-release mechanisms on bedroom window bars are becoming a common requirement throughout the country. Philanthropic organizations and public grants are available to assist with the expense of retrofitting non-compliant bars and to fund awareness efforts (Chubb, 1993).

What federal regulations, state laws, local ordinances, codes or standards regulate residential security bars?

The NFPA Life Safety Code 101, along with all the model building and fire codes, address egress requirements and security bars. Most local jurisdictions choose not to enforce code requirements on single or duplex family dwellings. Mississippi, California, Texas, and Florida are four states identified during this research as having specific laws addressing residential security bars. The degree of legislation varies even among those states. This author is of the opinion that a national standard needs to be set as a model for all states to follow.

What type of training should be provided for emergency response personnel concerning residential security bars?

All the departments surveyed indicated that their firefighters were provided with forcible entry training, yet none stated that there was any training specifically designed to address security bar removal or tactical considerations. After studying the literature review on this question, this author understands the need to train specifically for bar removal. Building construction is a major factor as to how the bars are mounted and how they can be removed.

Incident commanders and company officers must keep tactical considerations in mind. Apparatus placement, portable ladders, hoseline application, ventilation practices, on-scene communications and the establishment of rapid intervention teams are crucial to a successful outcome (McCormick, 1997).

What elements should be included in programs developed to inform residents of the fire dangers associated with residential security bars?

According to the literature review and the telephone surveys, there are departments that are working to inform citizens of the dangers of residential security bars. Most departments identified are using their fire prevention or fire safety education divisions to disseminate information to the public. The message is being incorporated into the general fire safety message, along with exit drills and working smoke detectors (Roberson, 2002).

All manners of media should be incorporated into a solid public awareness program. Passive means of providing information include links on city and departmental web sites. Active means of providing the information should include collaborative efforts with other safety minded organizations, such as Neighborhood Watch and religious organizations (Chubb, 1994).

The three E's are very important in accomplishing the goal of identifying a strategy to reduce the number of egress problems posed by residential security bars. Education must come first. This author believes that education will have to play a large part in reducing the number of injuries and deaths associated with residential security bars. Education will have to begin within the local departments along with the local politicians and civic leaders. State legislators must be made aware of the inherent dangers and then enlist their assistance to write legislation mandating the use of safety devices on windows and doors.

Engineering has to be enlisted in the development of feasible means of quick escape. A variety of quick-release devices are on the security bar market, yet cost is a major deterrent when it comes to their use. Finally, current codes and laws must be

enforced. Laws and ordinances are just words written on a document without enforcement.

The development of a plan that encompasses each of these areas will be of great benefit to the Jackson Fire Department. Perceived benefits will be fewer injuries and deaths of both civilians and firefighters.

Recommendations

The problem as previously stated is that the Jackson Fire Department is responding to a significant number of residential structure fires where citizens and firefighters are becoming trapped due to the increased use of improper residential security bars on windows and doors. The purpose of this research was to identify a strategy to reduce the number of egress problems posed by residential security bars.

The research conducted has confirmed the need of the Jackson Fire Department to develop a proactive strategy to address the fire dangers associated with residential security bars. The following recommendations are made to assist in the development of a strategy to be implemented by the Jackson Fire Department:

1. Seek the support of the fire chief and upper command staff in the development of a program designed to address security bar dangers.
2. Organize a legislative committee to help champion the cause of residential security bar safety.
3. Enlist the assistance of the Fire Safety Education Division to help inform the public of safety considerations.
4. Develop a working partnership with other safety minded organizations, such as Neighborhood Watch, churches, and civic groups.

5. Identify potential philanthropic and grant resources to fund programs.
6. Develop an emergency operating guideline for response to structures armored with security bars.
7. Design a training program for firefighters specifically focused on security bar removal and tactical decision-making.
8. Have each unit conduct familiarization windshield surveys within their first response district to identify residences with security bars.
9. Appoint a coordinator to ensure continuity of the program.

Changes brought about from the recommendations presented would help prepare first responders to be more effective on emergency scenes when confronted with residential security bars. As a result of training, crews would be better able to remove security bars in a timely manner, potentially allowing for quicker rescue and evacuation of the structure. Coordinated efforts between interior and exterior crews will help create a safer environment for firefighters. The ultimate benefit of developing a strategy to reduce the number of egress problems is a reduction in injuries and deaths of citizens and firefighters.

Further research is needed to track long-term results. A baseline needs to be identified from local statistics involving fires and security bars. A five-year plan is recommended to identify target areas, provide training, secure funding, enact legislation, and create enforcement guidelines. Benchmark evaluations should be scheduled bi-annually to keep the program focused. Final evaluation of the effectiveness of the program should be performed at the end of the five years. Evaluation criteria should include detailed emergency response reports, statistical data, and numbers of educational

contacts made. The Jackson Fire Department should appoint a coordinator to oversee training and public education.

The author would recommend to other researchers to develop a close working relationship with other safety organizations. There does not appear to be much enforcement of codes and laws concerning residential security bars. The author recommends that other researchers check into local codes and ordinances to see if there is already legislation that should be enforced. Be sure to gain the support of decision-making authorities within your organization when conducting research that affects policies and procedures.

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Appendix A

Fire Safe and Secure

A Factsheet on Security Bar Safety

More than 4,000 Americans die each year in fires, and 20,000 are injured. Security bars may help keep your family safe from intruders, but they can also trap you in a deadly fire!

The U. S. Fire Administration (USFA), a part of the U. S. Department of Homeland Security, encourages individuals to use the following tips to help reduce the number of fire injuries and deaths associated with security bars on windows and doors preventing fire escape.

USE QUICK RELEASE DEVICES ON BARRED WINDOWS AND DOORS

Windows and doors with security bars should have quick release devices to allow them to be opened immediately in an emergency. These devices operate from inside and allow the bars to be opened for emergency escape without compromising the security of your home. The quick release devices should be easy to open without the use of a key, detailed knowledge or great physical effort. Release devices vary by region and manufacturer. Contact your local fire department on a non-emergency number for information on approved release devices available in your area.

CONSIDER RETROFITTING CURRENT SECURITY BARS

Security bars on windows and locked doors prevent escape from fire and also impede firefighters' rescue attempts. If the security bars in your home are permanently fixed or do not have quick release devices, they should be retrofitted with release devices.

BE AWARE OF SECURITY BAR ISSUES WHEN PRACTICING FIRE ESCAPE ROUTES

Know and practice fire escape plans monthly, and use them to identify and correct obstructions of windows and doors needed for escape from a deadly fire. Make sure that windows are not stuck, screens can be taken out quickly and that security bars can be properly opened.

It is important that everyone in the family understands and practices how to properly operate locked or barred windows and doors. Windows should open easily and be wide enough to allow escape, and locked or barred doors should operate quickly and easily.

PLAN TWO EXITS OUT OF EACH ROOM

The best escape plans have two ways to get out of each room. If the primary exit is blocked by fire or smoke, you will need a second way out. A secondary route might be a window onto an adjacent roof or an Underwriter's Laboratory (UL) approved collapsible ladder for escape from upper story windows.

DESIGNATE A MEETING PLACE OUTSIDE AND TAKE ATTENDANCE

Designate a meeting location away from the home, but not necessarily across the street. For example, meet under a specific tree, at the end of the driveway, or on the front sidewalk to make sure everyone has gotten out safely. Designate one person to go to a neighbor's home to phone the fire department.

ONCE OUT, STAY OUT

Remember to escape first, then notify the fire department using the 911 system or proper local emergency number in your area. Never go back into a burning building for any reason. Teach children not to hide from firefighters.

Finally, having working smoke alarms installed on every level of your home dramatically increases your chances of survival. Smoke alarm batteries need to be tested every month and changed with new ones at least once a year. Also, consider replacing the entire smoke alarm every ten years, or as the manufacturer guidelines recommend.

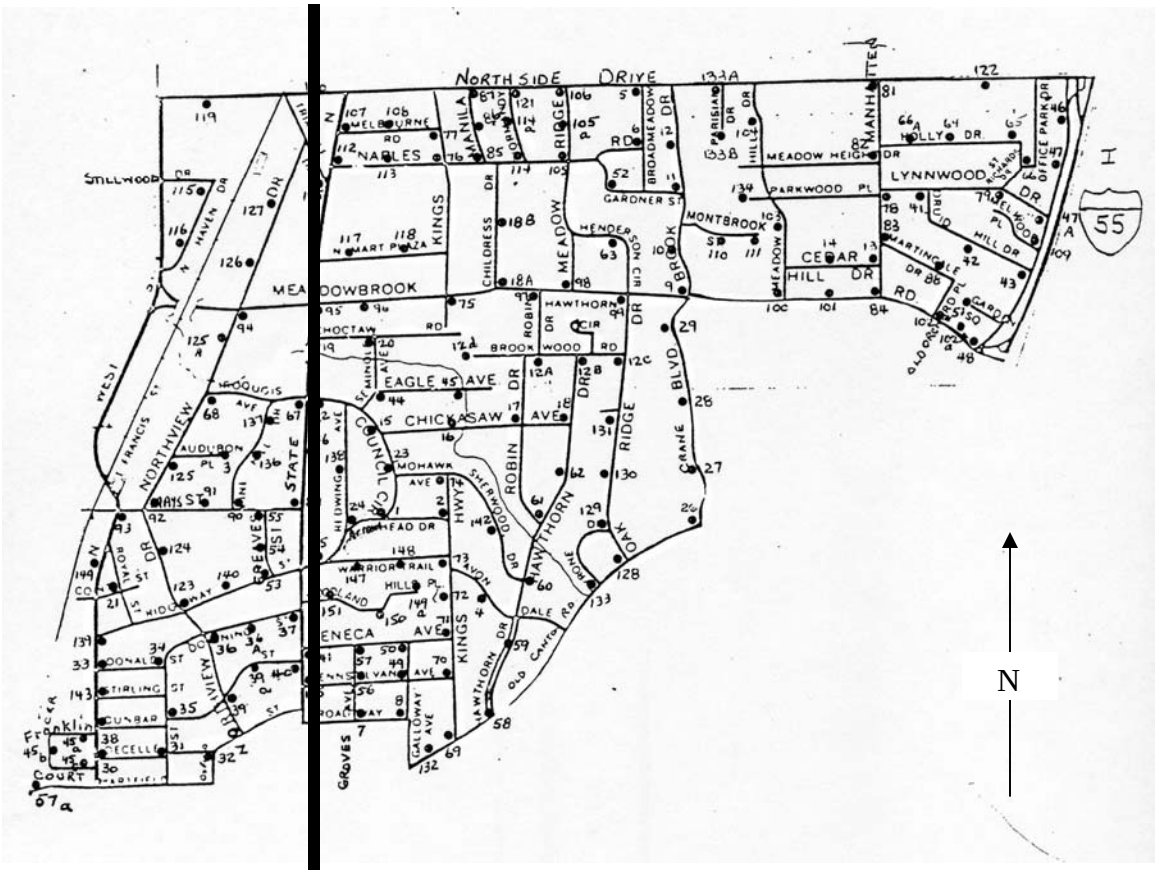
For more information contact:
The U. S. Fire Administration
16825 South Seton Avenue
Emmitsburg, MD 21727
or
Visit the USFA Web site:
www.usfa.fema.gov

Homeland Security

March 2006

Appendix B

Windshield Survey Area



Division A Division B

Appendix C

Residential Security Bars

Windshield Survey

Address	Windows	Doors

Appendix D

Department Telephone Survey Contacts

Department	Contact	Telephone
Lafayette, Louisiana	Travis Morgan, Assistant Chief	(337) 291-8704
Dallas, Texas	Robert Holloway, Lieutenant	(214) 670-4311
Los Angeles, California	Jack Reiss, Captain	(213) 485-6029
Chicago, Illinois	Demarre McGill, Deputy Commissioner	(312) 745-3705
Houston, Texas	Homere Poncelopez, Captain	(713) 247-5000
Fort Worth, Texas	Bob Morgan, Senior Planning Engineer	(817) 392-2838
Shreveport, Louisiana	Randy Stephens, Assistant Chief	(318) 673-6756
Baton Rouge, Louisiana	Jay Cutrer, Inspector	(225) 354-1400
Detroit, Michigan	Darrel Moore, Deputy Chief	(313) 596-2957
Fort Lauderdale, Florida	Jeff Lucas, Inspector	(954) 828-6370

Appendix E

Department Telephone Survey

Date: _____

Name/Position: _____

Department: _____

Address: _____

_____

Phone: _____

Email: _____

Size of Dept.: _____

Population of Community: _____

Has your department responded to a fire incident where residential security bars were a factor in a fatality or injury? _____

Is so, when? _____

Number of fatalities: _____

Number of injuries: _____

Has your department taken steps to help prevent similar incidents from occurring? _____

If so, what? _____

Are there any local ordinances or state laws directed at residential security bars affecting your jurisdiction? _____

Has your department conducted any special training for firefighters concerning security bars? _____ If so, what? _____

_____